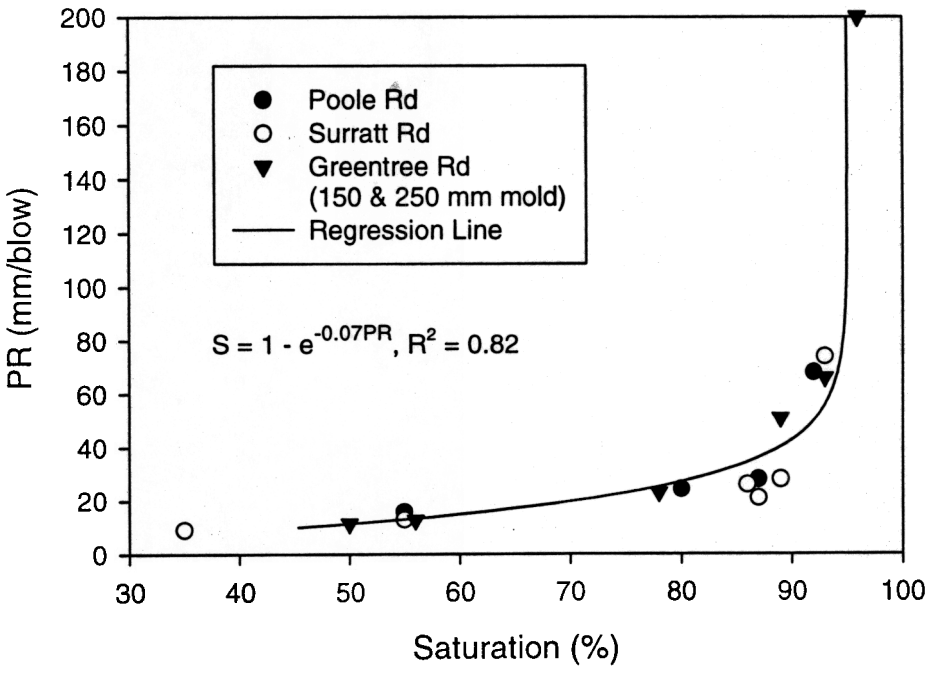

Figure 5.5 PR versus percent saturation

$$S = 1 - e^{(C*PR)} \qquad (7)$$

Where S= degree of Saturation in (%). The C coefficient is equal to negative 0.07 (-0.07) for the three test soils used in this study.

If the PR data were modified by a factor of 1.2 to account for the confinement effects as discussed before, the modified C constant (C_m) is determined to be negative "– "0.065. The coefficient of determination R^2 for this relationship is 0.82. Once the degree of saturation (S), and the water content (w) were evaluated, the in situ dry unit weight can be computed as follows:

$$\gamma_{dry} = \frac{\gamma_w * \left[1 - e^{(Cm*PR)}\right]}{w + \frac{1 - e^{(Cm*PR)}}{Gs}} \qquad (8)$$

Where γ_{dry}= dry unit weight, w = moisture content, S=degree of saturation, and Gs=specific gravity.